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## Identification of medicinal plants effective on common cold: An ethnobotanical study of Shiraz, South Iran

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### ABSTRACT

Common cold is a very prevalent disease with cough, rhinorrhea, stuffy nose, and sore throat as the most common symptoms. Other symptoms include myalgia, fatigue, headache, and dyspepsia. Nowadays, there is no specific treatment to common cold but some ethnopharmacological and ethnobotanical studies have been done to investigate different therapies used to relieve disease symptoms. The present study was conducted to identify the medicinal plants used to treat common cold in Shiraz. The traditional therapeutic data in this study were gathered between July, 2015 and September, 2015 by the questionnaires distributed among the groceries across Shiraz. The findings of this study indicated that 22 medicinal plants are used to treat common cold in Shiraz. Some of the plants presented in this study such as *Althea aucheri* Boiss., *Adonis aestivalis* L., and *Amygdalus scoparia* Spach. are native to Shiraz region, and have been used to treat common cold for the first time in Iran traditional medicine. These plants may be used to produce effective natural drugs on common cold if complementary studies are conducted on them.

**Key words:** Common cold, Traditional medicine, Phytotherapy, Medicinal plants, Iran

### INTRODUCTION

Common cold, which is also referred to as acute coryza, nasopharyngitis, and pharyngitis, is a communicable disease of upper respiratory tract, mainly nose. The findings have indicated that adults acquire common cold 2-4 times a year [1, 2]. The most common symptoms of common cold include cough, rhinorrhea, stuffy nose, and sore throat. Other symptoms are myalgia, fatigue, headache, and dyspepsia. Sore throat and cough occur in approximately 40% and 50% of the individuals, respectively. The cough due to common cold is usually dry and continuous. Further, myalgia is seen in half of the patients with common cold. Fever is infrequent in adults but common in infants and children and a mild fever up to 38.9°C may be seen. Some viruses that cause common cold might be asymptomatic. Sputum or nasal secretions may be colorless or yellow and/or green, which does not determine whether the infection is bacterial or viral [3-6]. Common cold usually begins with fatigue, feeling cold, sneezing, and headache and is followed by other symptoms such as rhinorrhea and cough. The symptoms begin to appear 16 hours after exposure to virus and reach their peak usually 2-4 days after the beginning of the disease. The symptoms usually disappear 7-10 days after, but some symptoms such as dry cough may persist for up to three weeks [7, 8].

Common cold is different from influenza. Influenza is an acute respiratory disease developed by influenza viruses. This disease involves upper and/or lower respiratory tract and is often associated with systemic symptoms such as

fever, headache, myalgia, and weakness [9]. Over 100 viral strains cause common cold but three viruses A, B, and A, involve in influenza. The infected site in common cold is upper respiratory tract, but the entire respiratory tract is involved in influenza. The symptoms of common cold gradually begin and appear within 1-3 days, but influenza symptoms appear at once, within some hours. Fever and chills are occasional and mild, but the body temperature is specifically over 38°C in influenza, which remains for 2-4 days. In common cold, headache is continuous and usually mild, but influenza is associated with severe headache [10-13].

In the past, humans have thought of treatment of diseases when they took place in themselves and their relatives and since the flora in nature has attracted their attention, they begin to test medicinal plants for treating diseases. In this regard, the therapeutic effects of many medicinal plants have been discovered by experience and repeated trials and many others are going to be discovered to prevent and treat various diseases [14-29]. Indeed, medicinal plants are a natural and easily accessible source [30-33] which contribute to treating diseases thanks to effective substances present in them [34-39]. The medicinal plants help to not only treat diseases but also contribute to healthcare and preventing diseases [40-49]. Even, the medicinal plants have been demonstrated to cause recovery from dangerous and hard to treat diseases [50-58].

Currently, there is no specific treatment to treatment but a variety of support measures have been taken to decrease the course of the disease. Since phytotherapy has long been applied to treat common cold in Iran and medicinal plants are being widely used in different regions of Iran, then we seek to report the medicinal plants used for treating common cold in Shiraz, south Iran in this article.

## MATERIALS AND METHODS

### *Region of study*

Shiraz, capital of Fars Province, is a big city with a 40-km length, 15-30-km width, and a rectangular area of 1268 square kilometers in central region of this Province, south Iran. Shiraz population was estimated over 1460665 individuals (1700687 individuals including the suburbs population) in 2011-2012. Shiraz is located at 1486-meter altitude in Zagros mountainous region and has a moderate climate. This city is neighbored by Derak Mountain from west and Bamoo, Sabzpoushan, Chehalmaghani, and Babakouhi (of Zagros) Mountains from north. The mean temperature is 30°C in June-July (hottest month of the year), 5°C in December-January (coldest month of the year), 17°C in March-April, and 20°C in September-October, with mean annual temperature of 18°C and annual rainfall of 3378 mm [55].

### *Method of identification and gathering of therapeutic effects of medicinal plants:*

In this study, traditional therapeutic data were gathered from herbalists across Shiraz through interviews and questionnaire fill-out between July 2015 and September 2015. To gather the data and record phytotherapy-related beliefs, the investigators referred the groceries in person and recorded their ideas on phytotherapy. The questionnaire included the questions addressing the place of interview, interviewee's characteristics, plants local name, the indications of local use, the used parts, the method(s) of use, the season of occurrence, and the types of plants kept at home. The data were closely recorded in the relevant tables and analyzed by Excel.

## RESULTS AND DISCUSSION

The findings of this study indicated that 22 medicinal plants are used to treat common cold in Shiraz. Table 1 gives further details regarding the medicinal plants identified as effective on common cold in Shiraz. Out of the identified medicinal plants, *Citrus limon*, *Borago officinalis*, *Zataria multiflora*, *Brassica rapa* (L.) Metz, and *Plantago major* L. had the highest frequency of citation. Most of the plants effective on common cold were from Lamiaceae, Asteraceae, Ranunculaceae, Malvaceae, and Rosaceae families. The medicinal plants with aerial organs used to treat common cold had a higher percentage (37%) than others (Figure 1). The medicinal plants were used mainly as boiled (decoction) and fumigated (diffuses) to treat common cold (Figure 2).

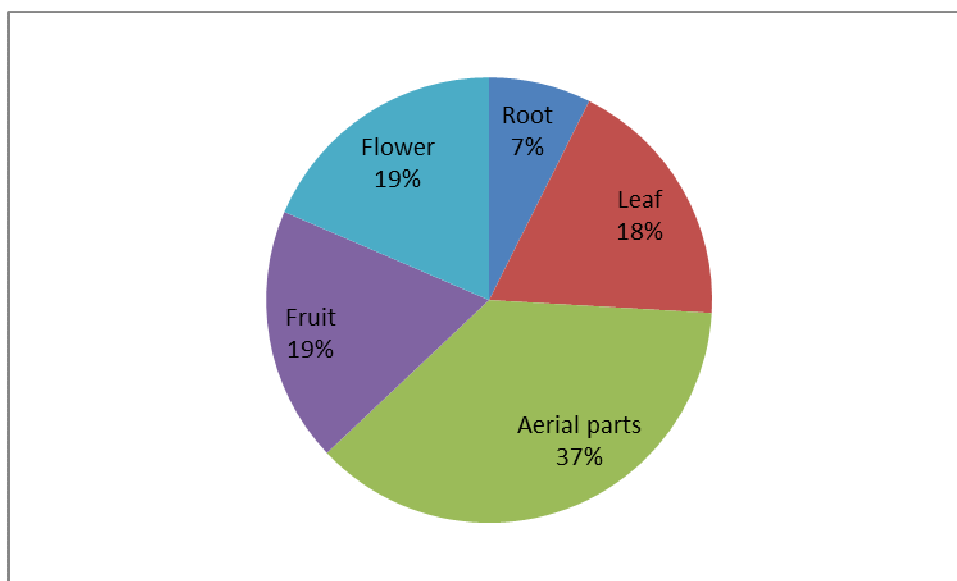


Figure 1. The percentage of the organs of the medicinal plants effective on common cold in Shiraz

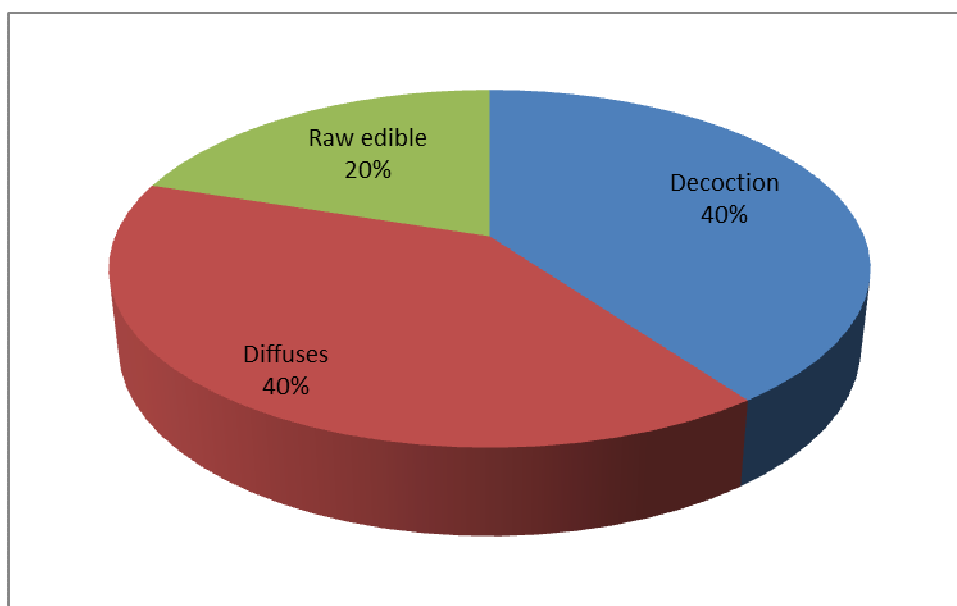


Figure 2. The percentage of traditional methods of use of medicinal plants for treatment of common cold in Shiraz

In this study conducted to gather the traditional data on and identify the medicinal plants effective on common cold in Shiraz, 22 medicinal plants from 14 families were identified, 9% of which are from Lamiaceae, Asteraceae, Ranunculaceae, Malvaceae, and Rosaceae families. The medicinal plants if these families seem to contain anti cold effective (antiviral, antibacterial, and anti-inflammatory) compounds.

Study of traditional use of the medicinal plants in different regions of Iran have indicated that in Arasbaran, *Sambucus nigra* is used to treat common cold [59]. In southwest Iran, *Brassica rapa* L., and *Plantago lanceolata* L. plants are used to treat common cold [60]. In Kazeroun ethnobotany, *Adiantum capillus-veneris* L., *Salvia macrosiphon* Boiss., and *Plantago coronopus* plants are used to treat common cold [61]. In traditional medicine of Kashan, *Echinops elymaiticus* Born., and *Alyssum bracteatum* Boiss. plants are effective on common cold [62]. In Kerman phytotherapy medicine, *Lallemantia royleana*, *Nepeta isphahanica*, *Myrtus communis*, *Plantago lanceolata*, *Ziziphora tenuior*, and *Ziziphus jujube* plants are traditionally used for treating common cold [63]. In traditional medical knowledge of Mobarakeh, Isfahan, *Alcea arbelensis* Beiss., *Valeriana officinalis* L., *Sisymbrium irio* L., *Rosmarinus officinalis* L., *Eucalyptus camaldulensis* Dehnh., *Plantago lanceolata* Soejarto, *Viola tricolor* L., *Contoneaster nummularis* Fish & Mey., *Achillea santolina*, and *Zingiber officinale* Roscoe plants are used to treat the complications due to common cold [64]. In Azarbaijan, *Artemisia aucheri* Boiss. plant is used for treatment of common cold [65]. In Ilam, *Rhamnus pallasii*, *Astragalus gossypinus*, *Echinops viscidulus*, and *Salvia sclarea* plants

are used to treat common cold [66]. In Khouzestan province, southwest Iran, *Oliveria decumbens*, *Ornithogalum persicum*, *Phlomis olivieri*, *Stachis lavandulifolia*, *Thymus vulgaris*, *Zataria multiflora*, *Plantago ovate*, *Cerasus mahaleb*, *Salix alba*, *Verbena officinalis*, and *Viola tricolor* medicinal plants are used for the patients with common cold [67]. Furthermore, in north Iran, *Echium amoenum*, *Stachys lavandolifolia*, and *Stachys laxa* medicinal plants have the highest usage for treatment of common cold [68]. Comparison of traditional medicine culture of different regions in Iran indicates that some medicinal plants are jointly used in many regions of Iran and some plants have been reported, for the first time, to be effective on common cold. *Althea aucheri* Boiss., *Adonis aestivalis* L., and *Amygdalus scoparia* Spach. are some of the medicinal plants native to Shiraz that are used as anti cold for the first time in Iran traditional medicine. Moreover, *Citrus limon*, *Borago officinalis*, *Zataria multiflora*, *Brassica rapa* (L.) Metz, and *Plantago major* L. have the highest frequency of citation and may be used to produce the natural drugs effective on common cold if complementary studies are conducted on them. Researches show which diseases are highly increasing in prevalence [69-76] in which bring many costs [77-82] and many diseases are reason for mortality in children and adults (83-89) and these diseases classified into infectious and non-infectious [90-96]. Bioactive compound of herbal plants can be a source for herbal drugs [97-115]. Most of these plants have phenolic compound such as flavonoids with anti-microbial activities. They may act as antiviral. These compounds have antioxidant properties which may act against a wide variety of other diseases, too [116-39].

Table 1. The medicinal plants effective on common cold in Shiraz

Scientific name	Family	Persian name	Usable Part of plant	How to use	The number of herbalists mentioned the plant	Frequency of citation (%)
<i>Glycyrrhiza glabra</i> L.	Fabaceae	Shirin bian	Root	Decoction	6	22.22
<i>Amygdalus scoparia</i>	Rosaceae	Badam	Fruits	Decoction	6	22.22
<i>Althea aucheri</i> Boiss.	Malvaceae	Khatmai Armanestani	Aerial parts	Decoction	9	33.33
<i>Nepeta persica</i> Boiss.	Lamiaceae	Poneasaye irani	Aerial parts	Diffuses	6	22.22
<i>Citrus limon</i>	Rutaceae	Limo torsh	Fruit	Raw edible	10	37.03
<i>Mentha piperita</i>	Lamiaceae	Naena	Leaves	Raw edible	7	25.92
<i>Viola odorata</i>	Violaceae	Banafshe	Flowers	Raw edible	3	11.11
<i>Ziziphus zizyphus</i>	Rhamnaceae	Anab	Fruits	Raw edible	1	3.70
<i>Adiantum capillus veneris</i>	Adiantaceae	Pare siavash	Aerial parts	Diffuses	5	18.51
<i>Centaurea depressa</i> M.	Asteraceae	Gole gandom	Aerial parts	Decoction	6	22.22
<i>Linum album</i> Ky. Ex Boiss.	Linaceae	Katan sepid	Aerial parts	Decoction	3	11.11
<i>Lavandula stoechas</i> L.	Lamiaceae	Ostokhodous	Aerial parts	Diffuses	3	11.11
<i>Malva sylvestris</i> L.	Malvaceae	Panirak	Leaves	Decoction	4	14.81
<i>Borago officinalis</i>	Boraginaceae	Gavzan	Flowers	Decoction	10	37.03
<i>Zataria multiflora</i>	Lamiaceae	Avishan shirazi	Aerial parts	Decoction	10	37.03
<i>Brassica rapa</i> (L.) Metz	Brassicaceae	Shalgam	Root	Raw edible	8	29.62
<i>Plantago major</i> L.	Plantaginaceae	Barhang	Leaves and seeds	Raw edible and decoction	8	29.62
<i>Adonis aestivalis</i> L.	Ranunculaceae	Cheshmkhorous tabestane	Aerial parts	Diffuses	5	18.51
<i>Gundelia tournefortii</i>	Asteraceae	Kanger	Aerial parts	Raw edible	6	22.22
<i>Plantago psyllium</i>	Plantaginaceae	Esfarze	Aerial parts	Decoction	3	11.11
<i>Matricaria recutita</i>	Asteraceae	Babouneh	Flowers	Decoction	-	-
<i>Amygdalus scoparia</i> Spach.	Rosaceae	Badamkouhi arzhani	Leaves and fruits	Decoction	5	18.51

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